

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A process of production of a high strength galvannealed steel sheet, comprising

continuously hot-dip galvanizing a high strength steel sheet having a content of Si of 0.4 to 2.0 wt% in an all radiant tube type annealing furnace without an oxidizing zone, during which introducing a gas containing CO₂ in an amount of 1 to 100 wt% and a balance of N₂, H₂O, O₂, CO, and unavoidable impurities into the annealing furnace,

making the atmosphere of a reducing zone an atmosphere containing H₂ to 1 to 60 wt% and the balance being N₂, H₂O, O₂, CO₂, CO, and unavoidable impurities,

controlling, in the atmosphere, the log(PCO₂/PH₂) of the carbon dioxide partial pressure and hydrogen partial pressure to log(PCO₂/PH₂) ≤ -0.5, the log(H₂O/PH₂) of the water partial pressure and hydrogen partial pressure to log(H₂O/PH₂) ≤ -0.5, and the log(P_T/PH₂) of the total partial pressure P_T of the carbon dioxide partial pressure PCO₂ and water partial pressure PH₂O and the hydrogen partial pressure to -3 ≤ log(P_T/PH₂) ≤ -0.5,

performing annealing in the reducing zone in a ferrite-austenite two-phase temperature region at 720°C to 880°C,

then cooling by a plating bath and performing molten zinc plating so as to form a hot-dip galvanizing layer on the surface of the high strength steel sheet, and

then heating for alloying the steel sheet on which the hot-dip galvanizing layer is formed at 460 to 550°C, so as to produce a high strength galvannealed steel sheet, wherein the annealing and plating are carried out in an all radiant tube type annealing furnace without an oxidizing zone.

2. (Previously Presented) A process of production of a high strength galvannealed steel sheet as set forth in claim 1, characterized by performing the hot-dip galvanizing in a hot-dip galvanizing bath of a composition comprised of an effective Al concentration in the bath of at least 0.07 wt% and the balance being Zn and unavoidable impurities and

performing the alloying at a temperature T ($^{\circ}\text{C}$) satisfying $450 \leq T \leq 410 \times \exp(2 \times [\text{Al}\%])$, where, $[\text{Al}\%]$: effective Al concentration (wt%) in the hot-dip galvanizing bath.

3. (Previously Presented) A process of production of a high strength galvannealed steel sheet as set forth in claim 1, the effective Al concentration (wt%) in the bath satisfying $[\text{Al}\%] \leq 0.092 - 0.001 \times [\text{Si}\%]^2$, where, $[\text{Si}\%]$: Si content in steel sheet (wt%).

4-5. (Canceled)